STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development

Standard Energy Code Proposal Form

May 2018

Log No. 166 Rev 6/25

Code being amended: ☐ Commercial Provisions ☐ Residential Provisions

Code Section # __C403.3.7 (new section)_____

Brief Description:

Limit flow rate in critical circuit of hydronic system.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

C403.3.7 Hydronic System flow rate. Chilled water and condenser water piping shall be designed such that the design flow rate in each pipe segment shall not exceed the values listed in Table C403.3.7 for the appropriate total annual hours of operation. Pipe sizes for systems that operate under variable flow conditions (e.g. modulating 2-way control valves at coils) and that contain variable speed pump motors are permitted to be selected from the "Variable Flow/ Variable Speed" columns. All others shall be selected from the "Other" columns.

EXCEPTION. Design flow rates exceeding the values in Table C403.3.7 are permitted in specific sections of pipe if the pipe is not in the critical circuit at design conditions and is not predicted to be in the critical circuit during more than 30 percent of operating hours.

TABLE C403.3.7

PIPING SYSTEM DESIGN MAXIMUM FLOW RATE IN GPM[1]

Pipe Size	<= 2000 hours/yr		>2000 and <= 4400 hours/year		> 4400 hours/year	
(in)	Other	Variable Flow/ Variable Speed	Other	Variable Flow/ Variable Speed	Other	Variable Flow/ Variable Speed
2 1/2	120	180	85	130	68	110
3	180	270	140	210	110	170
4	350	530	260	400	210	320
5	410	620	310	470	250	370
6	740	1100	570	860	440	680
8	1200	1800	900	1400	700	1100
10	1800	2700	1300	2000	1000	1600
12	2500	3800	1900	2900	1500	2300
Maximum velocity for pipes over 14 to 24 in. in size	8.5 ft/s	13.0 ft/s	6.5 ft/s	9.5 ft/s	5.0 ft/s	7.5 ft/s

1. There are no requirements for pipe sizes smaller than the minimum size or larger than the maximum size shown in the table.

Purpose of code change:

Reduce pumping energy by sizing pipes large enough to minimize flow resistance.

Your amendment must meet one of the following criteria. Select at least one:

- ☐ Addresses a critical life/safety need.
- ☐ The amendment clarifies the intent or application of the code.
- ☒ Addresses a specific state policy or statute. (Note that energy conservation is a state policy)
- ☐ Consistency with state or federal regulations.
- ☐ Addresses a unique character of the state.
- ☐ Corrects errors and omissions.

Check the building types that would be impacted by your code change:

- ☐ Single family/duplex/townhome
- ☐ Multi-family 1 – 3 stories
- ☒ Multi-family 4 + stories
- ☒ Commercial / Retail
- ☒ Institutional
- ☐ Industrial

Your name	Duane Jonlin	Email address	duane.jonlin@seattle.gov
Your organization	City of Seattle	Phone number	206-233-2781

Other contact name -

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9278.

Economic Impact Data Sheet

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

Ensures that hydronic system piping is designed appropriately. Will result in larger pipe sizes for projects that would have otherwise had under-sized pipes. Will reduce pumping energy costs.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs**. **Webinars on the tool can be found Here and Here**)

$0.02/square foot

Show calculations here, and list sources for costs/savings, or attach backup data pages

$2000 extra cost for piping in 100,000 sf building

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?

0.6 KWH/square foot

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

Typical EUI of 40, HVAC EUI of 12 (30% of total), 5% reduction = 0.6 kbtu/sf/yr

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application: (none)

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.